Documentation

GEM 3KW
Power Module

Installation Manual

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Warning

Installation of the GEM system can be carried out by any suitably qualified person. The installation does not need MCS approval and will not invalidate any part of the MCS approval of your PV installation.

WARNING : ISOLATE MAINS SUPPLY BEFORE COMMENCING INSTALLATION

INSTALLATION AND CONNECTION SHOULD ONLY BE CARRIED OUT BY A SUITABLY QUALIFIED PERSON AND IN ACCORDANCE WITH THE CURRENT EDITION OF THE IEE WIRING REGULATIONS.

If in doubt consult a qualified electrician.

Safety Information

Warranty

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Important Safety Information

All safety warnings give specific details of the potential danger/warning present and indicate how to reduce risk of injury, damage and electric shock resulting from improper use of the device. Carefully observe the following instructions:

- Installation and maintenance must be carried out by a competent person, in compliance with the manufacturer's instructions, the latest edition of the IEE wiring regulations and local safety regulations.

  If in any doubt, consult a qualified electrician.
- The device must be disconnected from the power supply before carrying out any installation work.
- A minimum of 50mm clearance must be provided each side of the device to allow adequate ventilation.
- Regulations require that the device is earthed.
- Do not remove the device cover while the power supply is connected.
- Do not operate the device with the cover removed.
- Do not attempt to repair or replace any part of the device.
- Do not touch the device with any wet part of the body.
- All Maintenance operations must be carried out by a qualified technician.
- This appliance is not suitable for outdoor use.
- The manufacturer accepts no responsibility for any damage or injury caused by improper use or failure to comply with these instructions.

GEM Power Module Installation Manual

Introduction

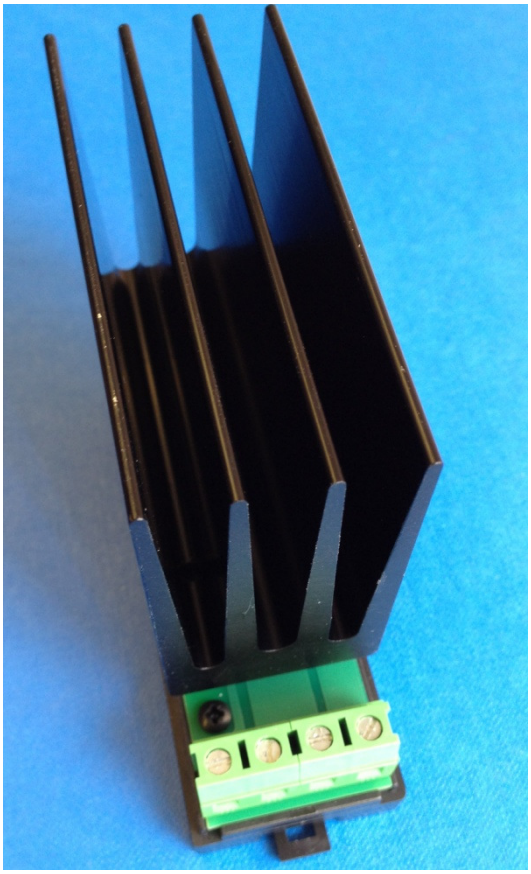
The standard GEM controller unit is designed to drive a standard 3KW load. This is usually sufficient for producing domestic hot water from 1-4KWp solar PV systems.

If GEM is to be used in higher power applications such as large hot water accumulators or swimming pool heating in large PV and/or wind generator installations then a higher output power than 3KW will probably be needed.

The GEM power modules will increase the GEM output capability to 6KW, 9KW or 12KW.

The GEM controller can support either one, two or three 3KW power modules to give a total power capability of 12KW.

Note that when the GEM is used with power modules only one GEM output is available. The output works in conjunction with the power modules to effectively form a single output with a variable power output from 0-6KW, 0-9KW or 0-12KW depending on the number of power modules used.



The GEM 3KW Power Module

Power Module Description

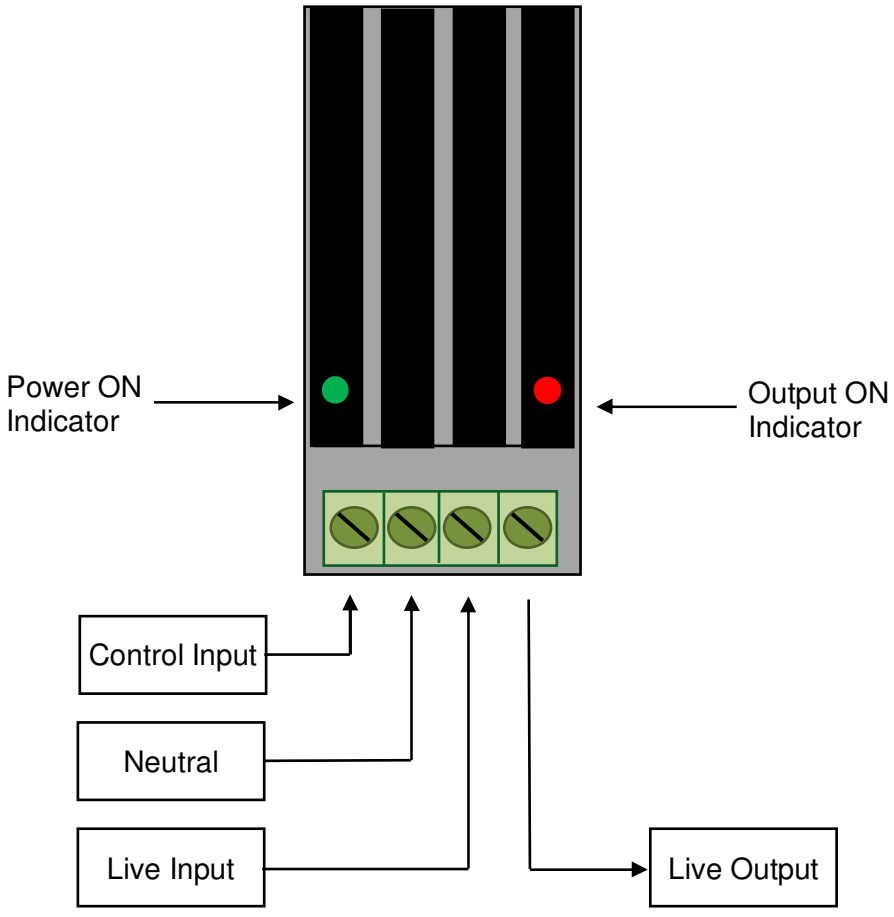
The GEM power module is designed to switch a 3KW resistive heating load under the control of the Apollo GEM controller unit. The power module must not be used for any other application.

The GEM power module measures 100mm L x 35mm W x 78mm H and is designed to mount on a standard 35mm DIN rail within an electrical enclosure.

The module Heatsink will become quite warm in service and must be mounted in an enclosure large enough to provide adequate ventilation. In addition the unit when mounted on the DIN rail must have a minimum 5mm gap between the power module and any other DIN rail mounted item.

A purpose designed DIN rail enclosure for installing up to three GEM power modules together with all cable terminations etc. is available from Apollo.

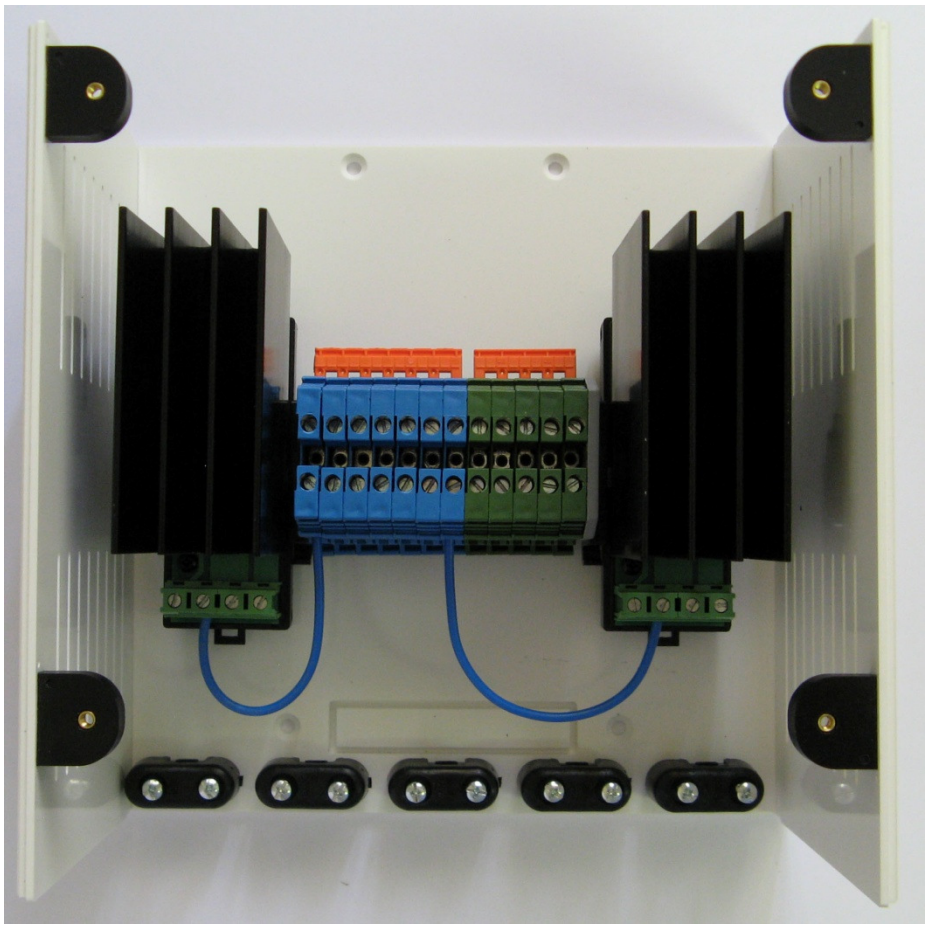
Power module drawing



Power Module DIN Enclosure

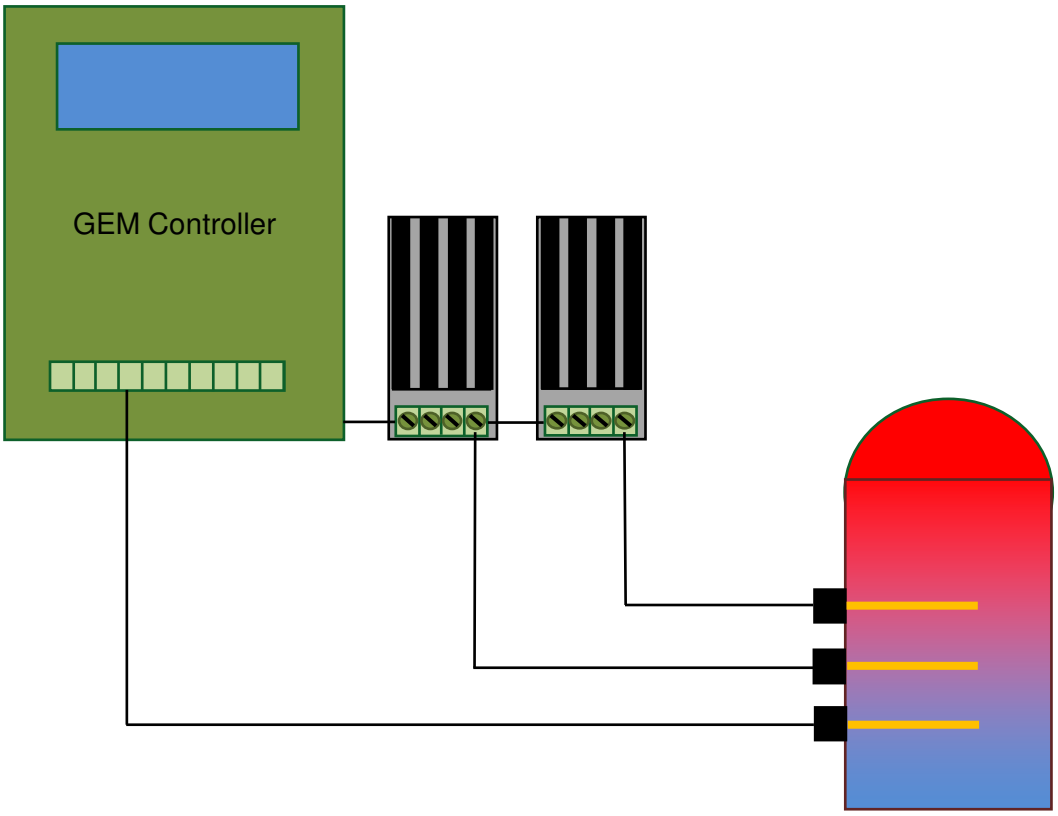
The Apollo GEM Power Module DIN enclosure is shown below.

The enclosure houses up to 3 power modules and includes all necessary terminations for a 6KW to 12KW GEM system.

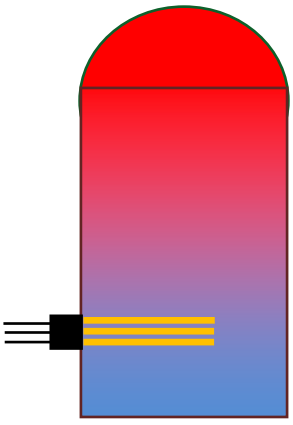


Interior of GEM Power Module Enclosure with 2 Power Modules Installed

Typical System Configuration with GEM Power Modules

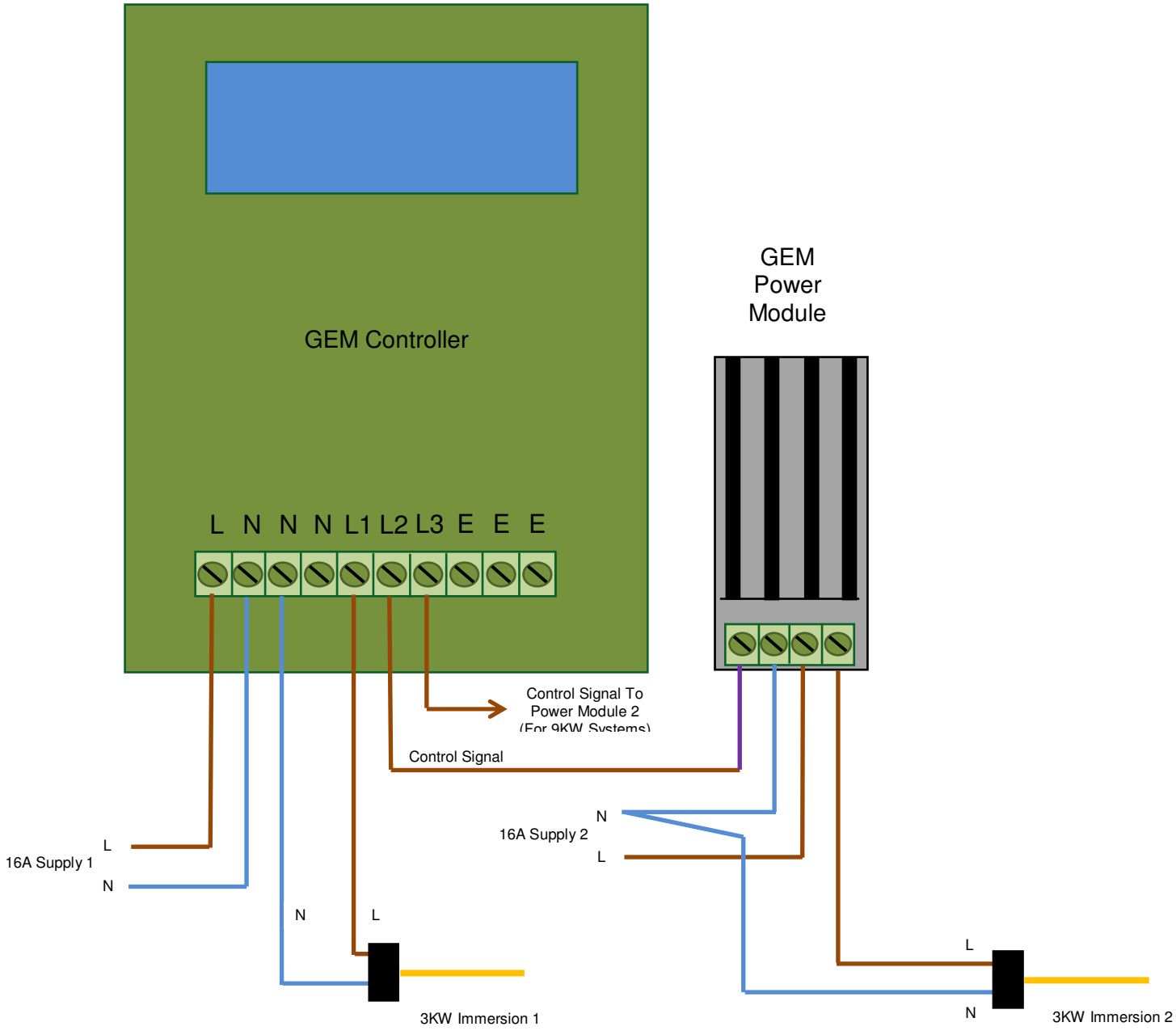


9KW Water heating system using 2 GEM power Modules
and 3 x 3KW immersion elements



Alternative 9KW Water heating system using 2 GEM power Modules and single boss 9KW "3-phase" immersion element

GEM Power Module System Schematic (6KW System)



Notes:

1. **!Supply 1 and Supply 2 (and supply 3 if 2 power modules are used) must be the same phase!**
2. Each supply must use a minimum 1.5mm CSA supply cable.
3. Each supply must be protected by a 16A Breaker.
4. Loads must not exceed 3.5KW per load

Setting Up the System

Compatibility

The GEM power modules can only be used with GEM controllers running software version 3.07 or higher.

Temperature Control

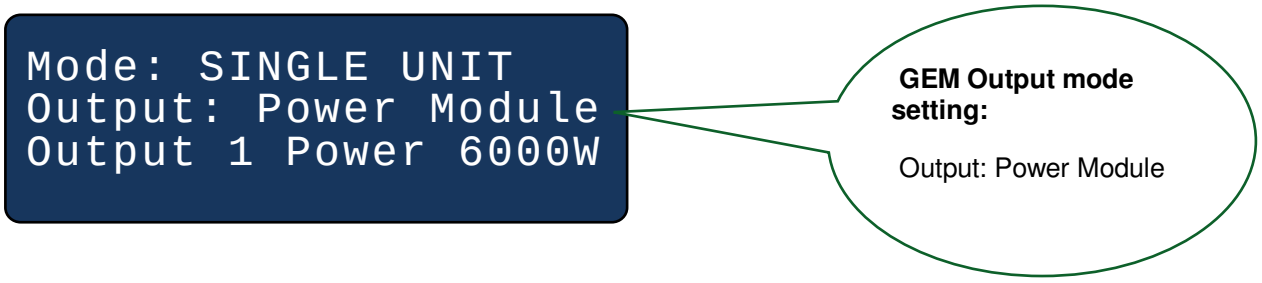
Temperature control can use either the GEM temperature sensor or the built-in immersion thermostat in immersion heater 1, i.e. the immersion heater element connected directly to the GEM controller. When the GEM controller senses that the thermostat in immersion heater 1 is up to temperature it will also turn off the loads on power module 1 (and 2/3).

See the GEM installation manual to information on configuring temperature control and setting temperatures.

Setting the Output mode

In order to use the external power module(s) the GEM output parameter in the second page of the installer menu must be set to **"Power Module"** as shown:

The GEM output mode is set in screen 2 of the installer menu:



Setting the Output Power

The Output 1 power parameter must be set to the total power of the system and will usually be set to 6000W when 1 power module is installed or 9000W when 2 power modules are installed.

This setting tells GEM what the *total* system power is but each individual load will be 3KW.

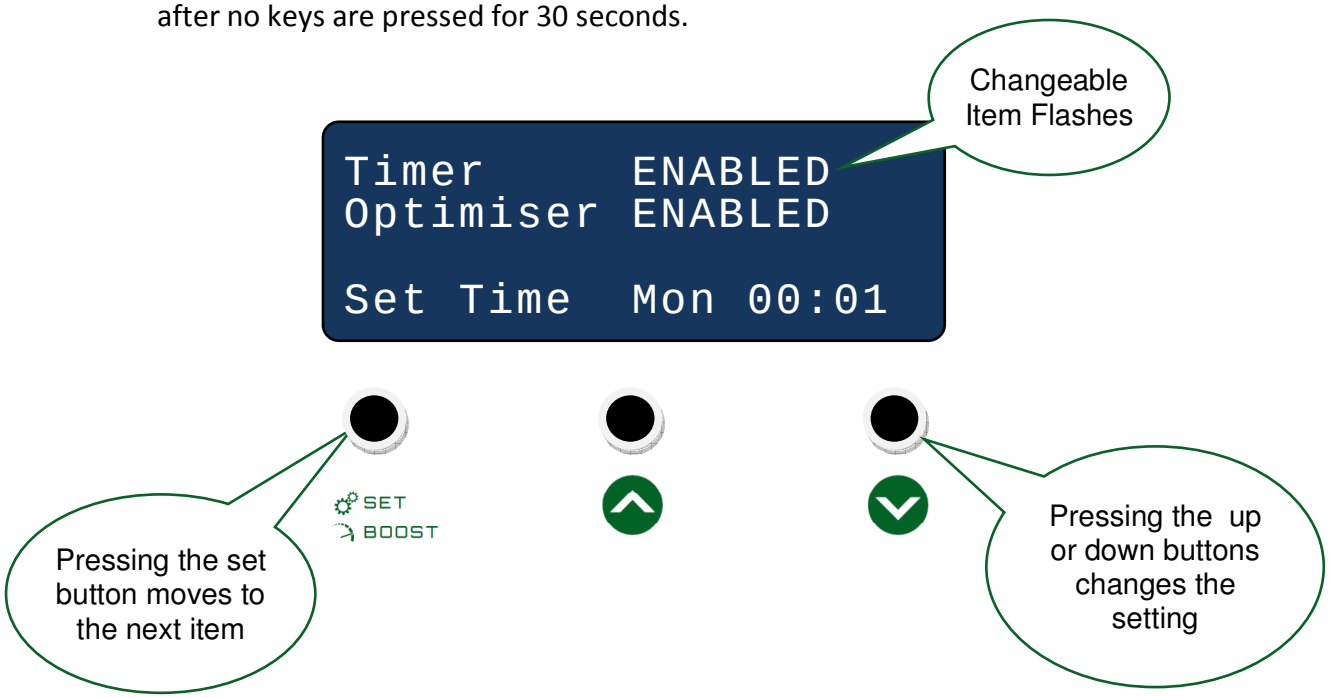
GEM Set-up Mode

Gem set-up mode is used to program various operating parameters such as the time/date, enable or disable the optimiser or timer, program the timer on/off times, enter the required optimiser and timer hot water temperatures etc.

GEM Set-up mode is entered by pressing and holding the set/boost Button SET BOOST for at least 3 seconds.

Upon entering set-up mode the first of 5 set-up screens are displayed:

- A setting which can be changed slowly flashes on and off.
- To change the setting press the UP or DOWN arrow keys.
- To move to then next setting press the SET key. SET BOOST
- When the last setting on the screen has been reached pressing the SET key will advance to the next set-up screen
- When the last item on the last set-up screen has been reached the set-up display goes back to the first set-up screen
- Holding the SET key down at any position in a setup screen provides a shortcut jump to the next set-up screen without stepping through each item.
- The changes will be saved and set-up will automatically exit after no keys are pressed for 30 seconds.


Changeable Item Flashes
Timer ENABLED
Optimiser ENABLED
Set Time Mon 00:01
SET BOOST
Pressing the set button moves to the next item
Pressing the up or down buttons changes the setting

Notes